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(54) **Communications receiver.**
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Récepteur de communications.

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coverage areas'

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Description

The present invention relates to a communications receiver for receiving messages, such as a radiopager. In the present specification the term radiopager is intended to cover a communications receiver for receiving an address codeword only or an address codeword together with concatenated data message codewords. Normally such receivers are not able to transmit signals although what is termed answer-back radiopagers are becoming available. For convenience of description, the present invention will be described for use in a POCSAG or CCIR Radiopaging Code No. 1 system details of which are disclosed in "The book of the CCIR Radiopaging Code No. 1" available from Secretary RCSI, British Telecom, Radiopaging, 23 Howland Street, London, W1P 6HQ, United Kingdom. However the teachings of the present invention are not system dependent and could readily be applied to radiopagers operating in accordance with the Golay or ERMES radiopaging protocols.

In the United Kingdom, POCSAG digital radiopaging services are provided by several network providers. However service providers supply radiopaging receivers to the end user and also bill the customer at periodic intervals say every 3 months. When supplying a radiopager, a service provider writes a radio identity code (RIC) or address in a non-volatile store included in the radiopager. The RIC uniquely links the radiopager with the particular user. Thus in operation if the radiopager detects the transmission of its RIC in the relevant predetermined frame of a batch, it remains energised to provide an audio, visual and/or tactile alert indication to the user and where appropriate it will store message data which is concatenated with its address codeword. Also the service provider will adjust the receiver to receive signals in the relevant frequency channel, the bit rate being already predetermined by the POCSAG protocol. The radiopager as delivered to the end customer is then able to operate within the receiving range of the transmitters operated by a predetermined network provider.

At the present time many countries have their own national digital paging systems based on POCSAG. However because of the likelihood of the same RIC being issued to a different pager in each country and each country operating its paging system on a different frequency or frequencies it is not usually possible for a user to take say a normal UK digital radiopager to another country operating the POCSAG system and use it there. Furthermore no arrangements currently exist for billing users who cross national boundaries.

A number of PTTs and other network providers in Europe operate Euromessage which is one attempt to provide a degree of international paging coverage within certain parts of Europe, primarily the major cities. Euromessage operates on a single frequency at UHF and requires a user to hire a radiopaging receiver from a service provider, and also requires the user to indicate,

several weeks in advance of his departure, those countries in which the user wishes to be paged. Drawbacks to Euromessage are that it is relatively inflexible, it is not comprehensive in its coverage of the respective countries and it requires a user to have to carry a second radiopaging receiver in addition to that usable in his home country.

EP-A2-0 360 228 discloses a paging receiver capable of receiving a ROM card which contains data which is usable by a pager controller in operating the receiver. In this known arrangement the ROM card has to be inserted into an appropriate built-in card reader for the duration of the usage of the receiver. Thereafter it can be removed for subsequent re-use. A drawback to such an arrangement is that if the ROM card is mislaid or damaged then the paging receiver cannot be used. Another drawback of retaining a ROM card in the paging receiver is that it detracts from the overall compactness of what is intended to be a small apparatus.

An object of the present invention is to provide more flexibility in the use of radiopagers.

According to the present invention there is provided a communications receiver comprising receiving means for frequency down-converting and decoding a received radio signal, control means for controlling the operation of said receiver in accordance with a stored program of instructions, said control means being coupled to said receiving means to receive decoded information from said receiving means, output means controlled by said control means to produce an indication of the received information to a user of said receiver, and device receiving means coupled to said control means for receiving a device containing information for use in carrying out the stored program of said control means, at least some of which information is expendable, characterised in that electrically alterable non-volatile storage means is coupled to said control means and in that when said device is received by said device receiving means said control means is adapted to cause the information in said device to be read out and stored in said non-volatile storage means and in so doing said expendable information in said device is erased thereby enabling the device to be removed from the device receiving means without affecting the operation of the receiver.

In one embodiment of the present invention the radiopager is a standard receiver which has not had a RIC embedded in it by a service provider. However the device, which may comprise a card, stores a RIC which is assigned to the card together with credit information comprising prepaid credit units. By inserting the card into the radiopager the RIC together with the credit units are loaded into respective storage locations in the radiopager which confirms that the information has been received. The card which has been erased is then withdrawn. A user has then to inform his office of the new RIC or access code, which may be printed on the card, in order that he can be paged. The prepaid credit units are debited in accordance with the usage of the radiopager.

ager, which usage might be related to the number of paging calls addressed to, and received by, the radiopager or the period(s) of time when the radiopager is available to receive paging calls. When the credit units have been exhausted then the user has a number of options, for example to obtain a new card with its own RIC or access code and prepaid credit units, to take the original card to a suitable office or a shop where the credit units are recharged on payment, or to have a supply of cards having the same RIC or access code and prepaid credit units. The use of such cards with radiopagers means that both items can be obtained from any suitable retail outlet and not just from an established service provider. Additionally because the credit units are prepaid then the service provider is relieved of the job of billing the user at regular intervals.

In another embodiment of the present invention the radiopager is capable of adapting its operating characteristics such as its frequency and, if applicable, its data rate in response to information loaded into it from a suitable card which has stored in it not only such information but also a RIC and prepaid credit units. When such information is loaded in then the radiopager is adapted to receive calls from a paging system operating in a particular area or country.

If the radiopager has sufficient storage then information from two or more such cards can be loaded into the radiopager. The information includes operating characteristics of systems in different geographical areas. When a user is in a particular area, say France, he selects France and the radiopager adapts itself according to the information loaded in from a French card. On crossing into Germany then the user selects Germany and the radiopager adapts itself accordingly. The prepaid credit units associated with one country cannot be used in another country should the credit units for that country be exhausted.

If desired the radiopager may be capable of receiving encrypted messages but in order to decode them the encryption key is required. Such a key may be provided by an insertable card which is erased during the loading of the key into the radiopager. If at the base station, the key used in the encryption is changed then the user of a radiopager has to insert a card having the new key in order to be able to receive paging alerts and/or messages.

The use of prepayment cards, credit cards and bank cards for the payment of telephone calls is known per se but such cards do not provide the telephone unit with an identity by which it can receive calls.

It is also known from a conference paper "Smart Card Technology Applied to the future European Cellular Telephone on the digital D-Network" read at Smart Card '90 International Exhibition and Conference, PLF Commun, 3 Vol. 332 PP, pages Q1 to Q13, Vol. 2, 1990 that in order for a user to be able to use his GSM radiotelephone it must have a Subscriber Identity Module (SIM) inserted into the telephone in order to be able to

operate. A user carrying his SIM with him is then able to roam internationally through the GSM system and make calls via any telephone unit simply by inserting his SIM. Billing is done by debiting the user. A SIM does not provide the possibility of prepayment of credit units to avoid billing, does not have its own RIC as opposed to that of a user and does not adapt the radiotelephone to the radio transmission characteristics of a country in which it is to be used.

The present invention will now be described, by way of example, with reference to the accompanying drawings, wherein:-

Figure 1 is a sketch drawing illustrating a radiopager and a device consisting of a card in which is embedded information to be loaded into the radiopager in order to enable it to operate,

Figure 2 is a block schematic diagram of a radiopager, and

Figure 3 is a sketch illustrating one method by which the radiopager can be used in different geographical areas.

In the drawings the same reference numerals have been used to indicate corresponding features.

The radiopager 10 shown in Figures 1 and 2 comprises a housing 12 which contains a radio receiver 14 and a controller 16. A liquid crystal display (LCD) panel 18 is provided in a wall of the housing 12 together with a plurality of push switches 20 which are used to determine various operating modes of the radiopager 10. A socket 22 is provided in a wall of the housing 12 for receiving a device, such as a card 24, which contains a RIC, prepaid credit units and, depending on its application, frequency, data rate and any other information which will be required by the radiopager 10 in order for it to operate. The card 24 is inserted into the socket 22 and the information it contains is loaded into a non-volatile store 26 under the control of the controller 16. The store 26 is electrically alterable and may comprise an EEPROM. The completion of the loading in of the information is confirmed by the radiopager displaying a confirmation message which may contain the RIC, number of credit units and optionally a system or country code on the LCD panel 18.

The radiopager 10 includes a frequency synthesiser 28 which produces a local oscillator frequency which is supplied to the receiver 14. The local oscillator frequency may be varied as required by means of the controller 16. A decoder 30 is connected between an output of the receiver 14 and an input to the controller 16. The purpose of the decoder 30 is to adapt a received paging signal coded according to the specified standard into a form which is suitable for application to the controller 16. A timer 32, LCD drivers 34 and an audio, visual and/or tactile alerting device(s) 36 are connected respectively to the controller 16.

In one mode of operation, a user of the radiopager

10 obtains a card 24 from any suitable retail outlet, which card has a RIC, access code and prepaid credit units embedded in it. The user inserts the card 24 into the socket 22 and the RIC and the number of credit units are loaded into the store 26 and the successful transfer of this information is indicated on the LCD panel 18. The card is then discarded as the information has been erased. Finally, the user then has to inform, say, his office of his current RIC or access code.

In use the radiopager 10 is energised for its respective frame according to the specified standard and if a paging message is received, it is decoded and the address codeword is compared with the current RIC by the controller 16 and if there is a match then the alerting device 36 is energised and, where applicable, any message codewords are stored in a RAM 37. If the debiting is done on a per call basis then the number of credit units is reduced by one after each call received. Alternatively if the debiting is done on a time basis, then when switching on the radiopager 10, the timer 32 increments the time and after a predetermined unit of time has elapsed the controller 16 deducts one credit unit from the number held in the store 26.

When the number of credit units has expired then various options are possible. For example the user goes to a retail outlet and purchases another card which has its own RIC, access code and credit units and the user inserts this card into the socket 22 and loads in the new RIC and the prepaid credit units. He then has to inform say, his office, of his new RIC or access code.

Frequent changes of RICs may be avoided by credit units on the card being rechargeable on payment of a fee or by a batch cards having the same RIC and access code being purchased and held by the user and/or his office.

This simple mode of operation has the advantages that the user can purchase his radiopager and cards from any suitable retail outlet and is not dependent on a service provider who may not be open for business, that billing is avoided and that the user has some control over the cost of operating his radiopager - currently in Great Britain service providers charge monthly fees independent of the degree of usage and number of calls received.

Figure 3 illustrates a mode of use where for example countries A and B have POCSAG digital paging systems which are operated on different frequency channels. In order to be able to use the same radiopager 10 in both countries, the local oscillator frequency produced by the frequency synthesiser 28 must be such as to enable the paging signal to be received. Accordingly the card 24 contains not only a RIC or access code and credit units suitable for the country concerned but also frequency data which the controller 16 can supply to the synthesiser 28 so that it generates the appropriate local oscillator frequency.

Thus when in country A, which will be regarded as the home country, the user purchases a card 24A and

loads in the required information which is used to adapt the radiopager 10 accordingly. As before, the user notifies his office of his RIC or access code. Whilst in country A, the user can be paged by way of a paging system PSA and its associated base stations BS.

When the user travels to country B, he purchases a card 24B and loads in a new RIC or access code, credit units and frequency information for country B and notifies his office in country A of his RIC or access code.

The radiopager 10 is now only able to accept paging calls from the paging system PSB in country B, which if they are from his office in country A, are relayed by the paging system PSA and the international PSTN network 38 to the paging system PSB.

Depending on the level of sophistication in the radiopager various implementations are possible to cover a radiopager roaming outside the area of one paging system and into the area of another paging system.

For example when considering Figure 3, the insertion of the card 24B can erase not only the RIC but also the unused credit units due to country A and vice versa when a subsequent card 24A is inserted.

Alternatively if the store 26 is large enough it may be able to store simultaneously RICs, credit units and frequency information on a per country basis and when a user arrives, or prior to his arrival, in a country either he buys a card and loads the information into his radiopager 10 or if such information is already stored and there are unused credit units, he uses the push switches 20 to select operation for the country concerned.

In a further refinement, if the radiopager has been preloaded with information relating to two or more countries and is in credit, then the controller 16 can by adapting the receiver characteristics on an empirical basis automatically set the radiopager up for receiving paging messages from the local paging system in the country concerned.

Credit units are stored on a per paging system basis and only debited when used on that system. For example, credit units for use on system PSB (Figure 3) cannot be used in the event the radiopager 10 operating on the system PSA and exhausting the number of credit units it has for that system.

A practical problem which may occur when using RICs embedded into cards is one of how long an interval should be allowed to elapse before issuing a card with an identical RIC. This problem can occur because there is a large but finite number of RICs and therefore the number of cards with different RICs is not limitless. If the same RIC has been issued two or more times and the respective radiopagers are in credit then without some precautions being taken a paging request can be accepted by the pager system for anyone of them and its transmissions can be received by all those pagers having the same RIC.

One method of reducing the incidence of multiple transmissions is for the card to be limited to a certain life, say 6 months or to a predetermined number of pag-

ing messages, say 100 messages, after which time or number of messages its registration at the paging system terminal is deleted.

A method by which the registration is deleted after a predetermined period of time will now be described. The card includes a RIC, an access code and a registration number. When the user purchases a new card he loads in the pager specific RIC and other information as described previously. At that point in time, the timer 32 (Figure 2) has not been set and can only be set by the user registering with the paging system by telephoning the registration number and giving the RIC or access number. The pager system then sends an initiating paging message to the radiopager 10 on the new RIC. The radiopager 10 will respond only to the initialising message, and on receipt of this message the timer 32 begins to count for a predetermined duration, say 6 months. At the same time the paging system records the time it sent the initiating message. At the end of the predetermined duration the paging system refuses to accept any more calls for that RIC or access number and also the radiopager 10 can indicate that its current RIC has expired. The system can now sanction the issuing of another card having the same RIC.

In the case of the authorisation of a predetermined number of calls, then the paging system monitors the number of paging calls which have been transmitted. To be viable, the authorisation will also contain a time restriction such as 100 calls in 6 months.

This method may not prevent a pager which has still the same RIC as has been reissued subsequently from receiving pages meant for someone else who also has that RIC. However this problem can be overcome by the timer erasing the RIC stored in the controller 16 so that it cannot receive anything except a specific initiating message after insertion of new/updated card data.

Another use for information stored on an insertable card is to decrypt encrypted messages by the card having the currently used encryption key which is loaded into the radiopager. If the paging system changes the encryption key monthly then new cards will have to be issued monthly if the user is to continue to be able to decrypt encrypted messages sent to his radiopager.

Claims

1. A communications receiver comprising receiving means (14, 30) for frequency down-converting and decoding a received radio signal, control means (16) for controlling the operation of said receiver in accordance with a stored program of instructions, said control means being coupled to said receiving means (14, 30) to receive decoded information from said receiving means, output means (34, 36) controlled by said control means (16) to produce an indication of the received information to a user of said receiver, and device receiving means (22) coupled

to said control means (16) for receiving a device (24) containing information for use in carrying out the stored program of said control means, at least some of which information is expendable, characterised in that electrically alterable non-volatile storage means (26) is coupled to said control means (16) and in that when said device (24) is received by said device receiving means (22) said control means is adapted to cause the information in said device (24) to be read-out and stored in said non-volatile storage means and in so doing said expendable information in said device (24) is erased thereby enabling the device to be removed from the device receiving means (22) without affecting the operation of the receiver.

2. A receiver as claimed in claim 1, characterised in that the expendable information contained in said device (24) includes information relating to a radio frequency and reception protocol applicable to a particular geographical area, said information upon read-out from said device being stored by said control means (16) in said non-volatile storage means (26).
3. A receiver as claimed in claim 1, characterised in that the expendable information contained in said device (24) includes information relating to radio frequency and reception protocols applicable to at least two different geographical areas, said information upon read-out from said device being stored by said control means (16) in said non-volatile storage means (26).
4. A receiver as claimed in claim 1, 2 or 3, characterised in that the expendable information contained in said device (24) includes at least one radio identity code which upon read-out from said device (24) is stored by said control means (16) in said non-volatile storage means (26), and in that said control means (16) is adapted to compare an address code derived from a received radio signal with the radio identity code stored in said non-volatile storage means (26) in order to determine whether the received radio signal is addressed to said receiver.
5. A receiver as claimed in any one of claims 1 to 4, characterised in that the expendable information contained in said device (24) includes prepayment information relating to authorized usage of said receiver, said pre-payment information is read-out from said device and stored by said control means (16) in said non-volatile storage means (26), and in that said control means (16) is adapted to debit the stored prepayment information in accordance with extent of usage of said receiver.
6. A receiver as claimed in claim 5, characterised in

that said control means (16) comprises timing means (32) for debiting the stored prepayment information in accordance with time of usage of the receiver.

7. A receiver as claimed in any one of claims 1 to 6, characterised in that the expendable information contained in said device (24) includes an encryption key which upon read-out from said device (24) is stored by said control means (16) in said non-volatile storage means (26), and in that said control means (16) is adapted to use the stored encryption key in carrying out said stored program.

Patentansprüche

1. Gemäß der vorliegenden Erfindung wird ein Kommunikationsempfänger bereitgestellt mit Empfangsmitteln (14, 30) zum Frequenz-Abwärtswandeln und Decodieren eines erhaltenen Funksignals, mit Steuermitteln (16) für die Steuerung des Betriebs des besagten Empfängers gemäß einem gespeicherten Anweisungsprogramm, wobei die besagten Steuermittel mit den besagten Empfangsmitteln (14, 30) gekoppelt sind, um decodierte Informationen von den besagten Empfangsmitteln (22) zu erhalten, mit von den besagten Steuermitteln (16) gesteuerten Ausgangsmitteln (34, 36), um für den Anwender des besagten Empfängers eine Anzeige der erhaltenen Information zu erzeugen, und mit Geräteempfangsmitteln (24), gekoppelt mit den besagten Steuermitteln, für den Empfang von geräteenthaltenen Informationen zur Verwendung bei der Ausführung des gespeicherten Programms der besagten Steuermittel, wobei mindestens einige der Informationen erweiterungsfähig sind, mit dem Merkmal, daß elektrisch veränderlichen Permanentspeichermittel (26) mit den besagten Steuermitteln (16) gekoppelt sind und daß bei dem Empfang des besagten Geräts (24) mit den besagten Empfangsmitteln (22) die besagten Steuermittel angepaßt werden, um die Information in dem besagten Gerät (24) anzuzeigen und in den besagten Permanentspeichermittel zu speichern und dabei die besagte erweiterungsfähige Information in dem besagten Gerät (24) gelöscht wird und somit das Gerät von den Geräteempfangsmitteln (22) entfernt werden kann, ohne den Betrieb des Empfängers zu beeinträchtigen.
2. Ein Empfänger laut Anspruch 1, mit dem Merkmal, daß die erweiterungsfähigen Informationen, die in dem besagten Gerät (24) enthaltenen sind, Informationen über eine Funkfrequenz und ein Empfangsprotokoll enthalten, die für einen bestimmten geographischen Bereich zutreffen, die besagten Informationen werden aus dem besagten Gerät gele-

sen und von den besagten Steuermitteln (16) in den besagten Permanentspeichermitteln (26) gespeichert.

3. Ein Empfänger laut Anspruch 1, mit dem Merkmal, daß die erweiterungsfähigen Informationen, die in dem besagten Gerät (24) enthaltenen sind, Informationen über Funkfrequenzen und Empfangsprotokolle enthalten, die für mindestens zwei unterschiedliche geographische Bereiche zutreffen, die besagten Informationen werden aus dem besagten Gerät gelesen und von den besagten Steuermitteln (16) in den besagten Permanentspeichermitteln (26) gespeichert.
4. Ein Empfänger laut Anspruch 1, 2, oder 3, mit dem Merkmal, daß die erweiterungsfähigen Informationen, die in dem besagten Gerät (24) enthaltenen sind, mindestens einen Funkerkennungscode enthält, der aus dem besagten Gerät (24) gelesen und von den besagten Steuermitteln (16) in den besagten Permanentspeichermitteln (26) gespeichert werden, und daß die besagten Steuermittel (16) angepaßt sind, um einen von einem empfangenen Funksignal abgeleiteten Adressiercode mit dem in den besagten Permanentspeichermitteln (26) gespeicherten Funkerkennungscode zu vergleichen, um festzustellen, ob das empfangene Funksignal an den besagten Empfänger adressiert ist.
5. Ein Empfänger laut einem der Ansprüche 1 bis 4, mit dem Merkmal, daß die erweiterungsfähigen Informationen, die in dem besagten Gerät (24) enthaltenen sind, Informationen über die Vorausbezahlung in bezug auf die Genehmigung zur Verwendung des besagten Empfängers enthalten, die besagten Informationen über die Vorausbezahlung aus dem besagten Gerät gelesen und von den besagten Steuermitteln (16) in den besagten Permanentspeichermitteln (26) gespeichert werden, und daß die besagten Steuermittel (16) angepaßt sind, um die besagten Informationen über die Vorausbezahlung in Übereinstimmung mit dem Verwendungsumfang des besagten Empfängers belastet wird.
6. Ein Empfänger laut Anspruch 5, mit dem Merkmal, daß in den besagten Steuermitteln (16) Zeitsteuermittel (32) für die Belastung der besagten Informationen über die Vorausbezahlung in Übereinstimmung mit der Verwendungszeit des Empfängers belastet wird.
7. Ein Empfänger laut einem der Ansprüche 1 bis 6, mit dem Merkmal, daß die erweiterungsfähigen Informationen, die in dem besagten Gerät (24) enthaltenen sind, eine Verschlüsselung enthalten, die aus dem besagten Gerät (24) gelesen und von den

besagten Steuermitteln (16) in den besagten Per-
manentspeichermitteln (26) gespeichert wird, und
daß die besagten Steuermittel (16) angepaßt sind,
um bei der Durchführung des besagten gespeicher-
ten Programms die gespeicherte Verschlüsselung
umzusetzen.

Revendications

1. Récepteur de communications comprenant un
moyen de réception (14, 30) pour abaisser la fré-
quence et décoder un signal radio reçu, un moyen
de commande (16) pour commander le fonctionne-
ment dudit récepteur conformément à un program-
me d'instructions en mémoire, ledit moyen de com-
mande étant couplé audit moyen de réception (14,
30) pour recevoir des informations décodées dudit
moyen de réception, un moyen de sortie (34, 36)
commandé par ledit moyen de commande (16) pour
produire une indication des informations reçues
pour un utilisateur dudit récepteur, un moyen de ré-
ception de dispositif (22) couplé audit moyen de
commande (16) et destiné à recevoir un dispositif
(24) contenant des informations à utiliser lors de
l'exécution du programme en mémoire dudit moyen
de commande, certaines au moins de ces informa-
tions étant consommables, caractérisé en ce qu'un
moyen de stockage non volatil électriquement mo-
difiable (26) est couplé audit moyen de commande
(16) et en ce que lorsque ledit dispositif (24) est reçu
ledit moyen de réception de dispositif (22), ledit
moyen de commande est à même de provoquer
l'extraction par lecture des informations présentes
dans ledit dispositif (24) et le stockage dans ledit
moyen de stockage non volatil, et de la sorte, les-
dites informations consommables dans ledit dispo-
sitif (24) sont effacées, permettant ainsi d'enlever
le dispositif du moyen de réception de dispositif (22)
sans affecter le fonctionnement du récepteur.
2. Récepteur suivant la revendication 1, caractérisé
en ce que l'information consommable contenue
dans ledit dispositif (24) comprend des informations
concernant un protocole de fréquence radio et de
réception applicable à une région géographique
particulière, ladite information, lorsqu'elle est extrai-
te par lecture dudit dispositif étant stockée par ledit
moyen de commande (16) dans ledit moyen de
stockage non volatil (26).
3. Récepteur suivant la revendication 1, caractérisé
en ce que l'information consommable contenue
dans ledit dispositif (24) comprend des informations
concernant des protocoles de fréquence radio et de
réception applicables à au moins deux régions géo-
graphiques différentes, ladite information, lorsqu'elle
est extraite par lecture dudit dispositif étant stoc-

kée par ledit moyen de commande (16) dans ledit
moyen de stockage non volatil (26).

4. Récepteur suivant la revendication 1, 2 ou 3, carac-
térisé en ce que l'information consommable conte-
nue dans ledit dispositif (24) comprend au moins un
code d'identification radio qui, lors de l'extraction
par lecture dudit dispositif (24), est stocké par ledit
moyen de commande (16) dans ledit moyen de
stockage non volatil (26), et en ce que ledit moyen
de commande (16) est à même de comparer un co-
de d'adresse dérivé d'un signal radio reçu au code
d'identification radio stocké dans ledit moyen de
stockage non volatil (26) afin de déterminer si le si-
gnal radio reçu est adressé audit récepteur.
5. Récepteur suivant l'une quelconque des revendica-
tions 1 à 4, caractérisé en ce que les informations
consommables contenues dans ledit dispositif (24)
comprennent des informations de prépayement
concernant l'usage autorisé dudit récepteur, ladite
information de prépayement est extraite par lecture
dudit dispositif et stockée par ledit moyen de com-
mande (16) dans ledit moyen de stockage non vo-
latil (26), et en ce que ledit moyen de commande
(16) est à même de débiter l'information de pré-
payement stockée conformément à l'importance de
l'usage dudit récepteur.
6. Récepteur suivant la revendication 5, caractérisé
en ce que ledit moyen de commande (16) comprend
un moyen de minutage (32) pour débiter l'informa-
tion de prépayement stockée conformément au
temps d'utilisation du récepteur.
7. Récepteur suivant l'une quelconque des revendica-
tions 1 à 6, caractérisé en ce que l'information con-
somnable contenue dans ledit dispositif (24) com-
prend une clé de cryptage qui, lors de l'extraction
par lecture dudit dispositif (24), est stockée par ledit
moyen de commande (16) dans ledit moyen de
stockage non volatil (26), et en ce que ledit moyen
de commande (16) est à même d'utiliser la clé de
cryptage stockée lors de l'exécution dudit program-
me en mémoire.

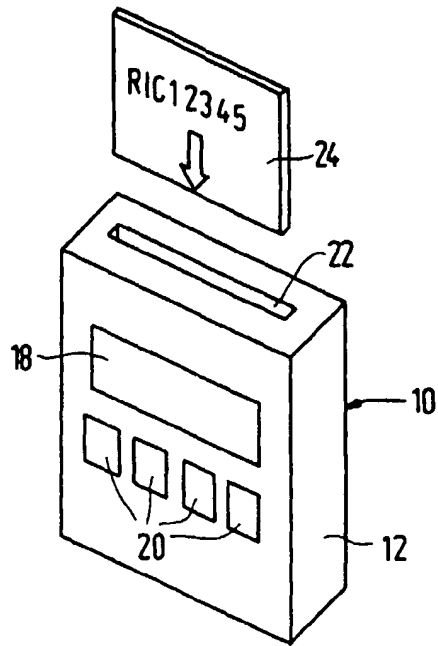


FIG. 1

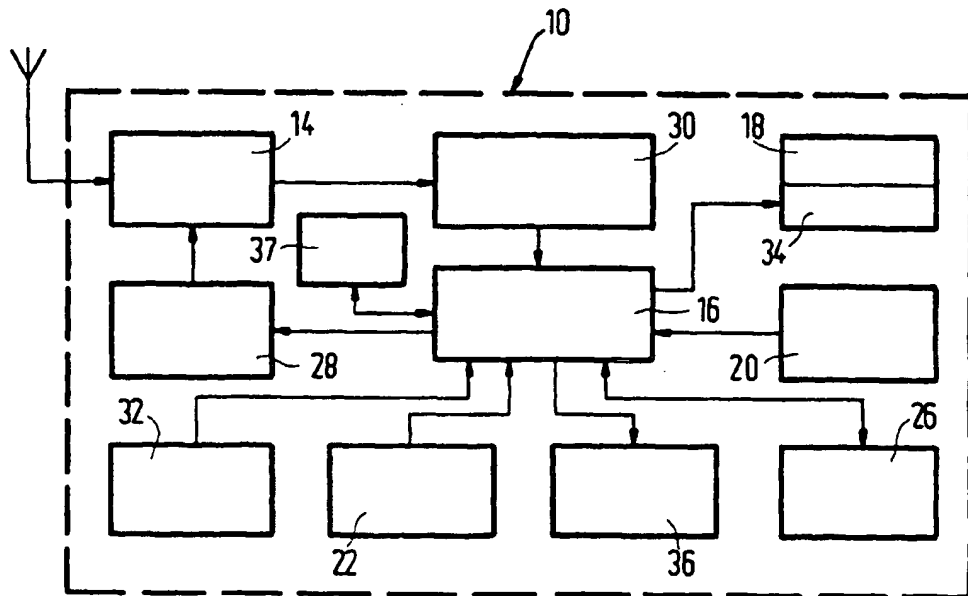


FIG. 2

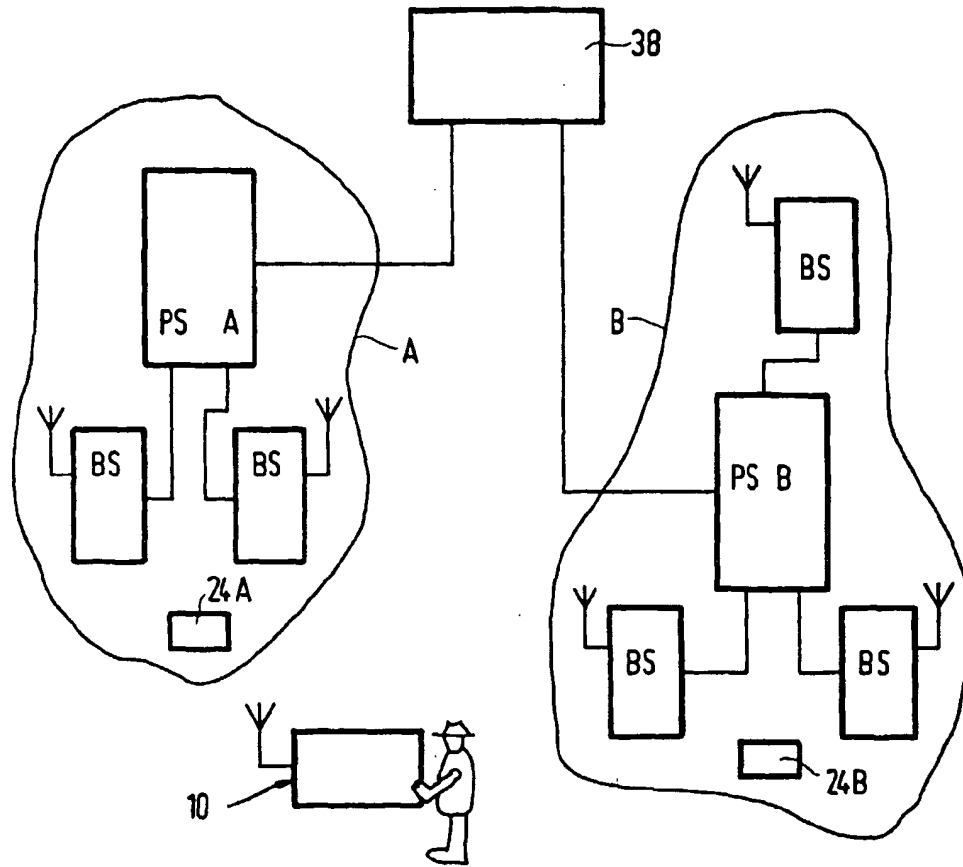


FIG.3